Reg. No. | | | | | | | | | | |

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

FOURTH SEMESTER B.TECH. (INSTRUMENTATION AND CONTROL ENGG.)

END SEMESTER DEGREE EXAMINATION, JUNE - 2019

SUBJECT: INTRODUCTION TO INDUSTRIAL INSTRUMENTATION [ICE 3281]

TIME: 3 HOURS MAX. MARKS: 50

Instructions to candidates :*Answer ALL questions and missing data may be suitably assumed.*

1A Draw the block diagram of a measurement system and explain the function of the components.

1B Write a note on calibration error and hysteresis.

1C Differentiate primary and secondary transducers with an example.

(4+3+3)

2A The relation between temperature and voltage output of a thermocouple is listed below. Calculate the linear model.

Temperature (ºC)	100	200	300	400	500	600
Voltage (mV)	8.2	17.5	26.8	34.3	42.7	49.6

2B What are the factors influencing the choice of a transducer? Explain.

2C Derive the equation for strain gauge.

(4+3+3)

3A Explain the working of a LVDT with neat sketch.

3B Write a note on temperature and heat and also mention the different scales used for the measurement of temperature.

3C Explain the working of a glass stem thermometer.

(4+3+3)

4A Write a note on thermistors and its types.

4B Explain the working of a Dead Weight Tester used for the calibration of pressure indicators / transmitters.

4C Explain how level measurement can be done on a closed tank using mercury manometers with neat sketch.

(3+4+3)

5A Draw the pressure profile of fluid flow due to an orifice restriction and explain Vena Contracta pressure.

5B What is pH? Draw and explain the function of pH electrodes.

5C Explain the working of a turbine type flow meter.

(3+4+3)

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